

## 炮制对生姜及其不同炮制品中挥发性成分的影响

投稿时间: 2012-05-01 [点此下载全文](#)

引用本文: 李娟,王智民,高慧敏.炮制对生姜及其不同炮制品中挥发性成分的影响[J].中国实验方剂学杂志,2012,18(19):77~81

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基金项目:国家"十五"科技攻关计划项目(2001BA701A11-1)

**中文摘要:**目的:比较生姜,干姜,炮姜,姜炭的挥发油含量及化学组成,以明晰炮制对姜挥发性成分的影响。方法:水蒸气蒸馏法对不同姜样品的挥发性成分进行提取,GC和GC-MS法对挥发油化学组成进行分析,阐明姜炮制前后的挥发性成分变化。结果:不同姜样品挥发油含量:生姜(扣除水分后)>干姜>炮姜>姜炭;不同样品的气相色谱图比较表明,生姜在炮制过程中挥发油的化学成分没有明显变化,只是成分比例关系的变化,其中生姜中低沸点成分较干姜、炮姜、姜炭多;大量成分苈烯、 $\beta$ -水芹烯、 $\alpha$ -姜黄烯、 $\alpha$ -反式- $\beta$ -香柠檬烯和倍半水芹烯在生姜及其不同炮制品均存在。结论:与生姜相比,炮制降低了挥发性成分的含量,尤其是低沸点成分的含量;但是,不同姜炮制品在挥发油成分上具有一致性,有利于建立统一的质量标准。

**中文关键词:**[姜](#) [炮制](#) [挥发油](#) [气相色谱](#) [气相色谱-质谱联用](#)

## The Effect of the Process on the Volatile Components in the Fresh Ginger and its Processed Products

**Abstract: Objective:** To compare the content of volatile oil and its chemical composition in *Zingiberis Rhizoma recens*, *Zingiberis Rhizoma praeparatum* and *Zingiberis Rhizoma carbonisata* and evaluate the effect of the process on the volatile components in the ginger and its processed products. **Method:** The volatile oil was extracted with steam distillation. GC and GC-MS analysis were carried out to compare the chemical composition of the volatile oil in different samples. **Result:** The content of oils in different samples was as follows: *Zingiberis Rhizoma recens* > *Zingiberis Rhizoma praeparatum* > *Zingiberis Rhizoma carbonisata*. The chemical components in four kinds of ginger products were same, and the difference is the ratios of the various components. Especially, the components with low boiling point in the volatile oil of fresh ginger are more than those in other three products. The main components, such as camphene,  $\beta$ -phellandrene, benzene, 1-(1,5-dimethyl-4-hexenyl)-,  $\alpha$ -trans- $\beta$ -bergamotene and cyclohexene, 3-(1,5-dimethyl-4-hexenyl)-6-methylene-, are present in all the samples of ginger products. **Conclusion:** Comparing with fresh ginger, the content of volatile oil was decreased due to the process procedure, especially, the content of the components with the low boiling point, however, the consistency of the chemical components is helpful for the establishment of the uniform quality standards of the different ginger products.

**keywords:** [ginger](#) [process](#) [volatile oil](#) [GC](#) [GC-MS](#)

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